



SEQUENCE LISTING

<110> Fujino, Masatsumi
Shin, Mei
Kato, Yukio

<120> NOVEL BHLH TYPE TRANSCRIPTION FACTOR
GENES DEC2

<130> 06501-101001

<140> US 10/078,650

<141> 2002-02-19

<150> PCT/JP00/03991

<151> 2000-06-19

<150> JP 11-233286

<151> 1999-08-19

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<213> Homo sapiens

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aacagcagtt gaac atg gac gaa gga att cct cat ttg caa gag aga cag      170
                Met Asp Glu Gly Ile Pro His Leu Gln Glu Arg Gln
                  1                5                10
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tta ctg gaa cat aga gat ttt ata gga ctg gac tat tcc tct ttg tat      218
Leu Leu Glu His Arg Asp Phe Ile Gly Leu Asp Tyr Ser Ser Leu Tyr
          15                20                25
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Met Cys Lys Pro Lys Arg Ser Met Lys Arg Asp Asp Thr Lys Asp Thr
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Tyr Lys Leu Pro His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile
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Asn Glu Cys Ile Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys
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ttg aca act ctg gga cat ctg gag aaa gct gta gtc ttg gaa tta act Leu Thr Thr Leu Gly His Leu Glu Lys Ala Val Val Leu Glu Leu Thr 80 85 90	410
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cag tcc gac ttg gat gcg ttc cac tcg gga ttt caa aca tgc gcc aaa Gln Ser Asp Leu Asp Ala Phe His Ser Gly Phe Gln Thr Cys Ala Lys 125 130 135 140	554
gaa gtc ttg caa tac ctc tcc cgg ttt gag agc tgg aca ccc agg gag Glu Val Leu Gln Tyr Leu Ser Arg Phe Glu Ser Trp Thr Pro Arg Glu 145 150 155	602
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gac acc gac agc ggc tac ggc ggc gaa gcc gag gcc cgg ccg gac cgc Asp Thr Asp Ser Gly Tyr Gly Gly Glu Ala Glu Ala Arg Pro Asp Arg 240 245 250	890
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Lys Arg Ser Met Lys Arg Asp Asp Thr Lys Asp Thr Tyr Lys Leu Pro
          35          40          45
His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile Asn Glu Cys Ile
          50          55          60
Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys Leu Thr Thr Leu
65          70          75          80
Gly His Leu Glu Lys Ala Val Val Leu Glu Leu Thr Leu Lys His Leu
          85          90          95
Lys Ala Leu Thr Ala Leu Thr Glu Gln Gln His Gln Lys Ile Ile Ala
          100          105          110
Leu Gln Asn Gly Glu Arg Ser Leu Lys Ser Pro Ile Gln Ser Asp Leu
          115          120          125
Asp Ala Phe His Ser Gly Phe Gln Thr Cys Ala Lys Glu Val Leu Gln
          130          135          140
Tyr Leu Ser Arg Phe Glu Ser Trp Thr Pro Arg Glu Pro Arg Cys Val
145          150          155          160
Gln Leu Ile Asn His Leu His Ala Val Ala Thr Gln Phe Leu Pro Thr
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49

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 Arg Asp Phe Ile Gly Leu Asp Tyr Ser Ser Leu Tyr Met Cys Lys Pro
 20 25 30

97

aaa agg agc atg aaa cga gac gac acc aag gta agt gat acc tac aaa
 Lys Arg Ser Met Lys Arg Asp Asp Thr Lys Val Ser Asp Thr Tyr Lys
 35 40 45

145

tta ccg cac aga tta ata gaa aag aaa aga aga gac cga att aat gaa
 Leu Pro His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile Asn Glu
 50 55 60

193

tgc att gct cag ctg aaa gat tta ctg cct gaa cat ctg aaa ttg aca
 Cys Ile Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys Leu Thr
 65 70 75 80

241

act ctg gga cat ctg gag aaa gct gta gtc ttg gaa tta act ttg aaa
 Thr Leu Gly His Leu Glu Lys Ala Val Val Leu Glu Leu Thr Leu Lys
 85 90 95

289

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337

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 Phe Cys Phe Leu Ser Pro Ser Ala Ala Ala Ala Tyr Val Gln Pro Phe
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 370 375 380

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 Ala Pro Phe Pro Leu Leu Tyr Pro Gly Ile Pro Ala Pro Ala Ala Ala
 385 390 395 400

gcg gca gcc gcc gcc gcc gct gcc gcc gcc gcc gcc gcg ttc ccc tgc 1249
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 405 410 415

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 420 425 430

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 Ala Thr Leu Leu Pro His Glu Val Ala Pro Leu Gly Ala Pro His Pro
 435 440 445

cag cac ccg cac ggc cgc acc cac ctg ccc ttc gcc ggg ccc cgc gag 1393
 Gln His Pro His Gly Arg Thr His Leu Pro Phe Ala Gly Pro Arg Glu
 450 455 460

ccg ggg aac ccg gag agc tct gct cag gaa gat ccc tcg cag cca gga 1441
 Pro Gly Asn Pro Glu Ser Ser Ala Gln Glu Asp Pro Ser Gln Pro Gly
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 35 40 45
 Leu Pro His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile Asn Glu
 50 55 60
 Cys Ile Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys Leu Thr

65					70					75					80
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His	Leu	Lys	Ala	Leu	Thr	Ala	Leu	Thr	Glu	Gln	Gln	His	Gln	Lys	Ile
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Cys	Val	Gln	Leu	Ile	Asn	His	Leu	His	Ala	Val	Ala	Thr	Gln	Phe	Leu
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<210> 13

<211> 1421

<212> DNA

<213> Mus musculus

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<221> CDS

<222> (74)...(1303)

<400> 13

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              1              5              10

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Leu Leu Glu His Arg Asp Phe Ile Gly Leu Asp Tyr Ser Ser Leu Tyr
          15              20              25

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          30              35              40

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Tyr Lys Leu Pro His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile
          45              50              55              60

aat gaa tgc att gct cag ctg aaa gat tta ctg ccc gaa cat ctg aaa      301
Asn Glu Cys Ile Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys
          65              70              75

ttg aca aca ctg ggg cat ttg gag aaa gca gta gtc ttg gaa tta act      349
Leu Thr Thr Leu Gly His Leu Glu Lys Ala Val Val Leu Glu Leu Thr
          80              85              90

tta aag cac ttg aaa gcg cta aca gcc tta act gag cag cag cat cag      397
Leu Lys His Leu Lys Ala Leu Thr Ala Leu Thr Glu Gln Gln His Gln
          95              100              105

aag ata att gct tta cag aat ggg gag cgc tct ctg aaa tcg ccg gtc      445
Lys Ile Ile Ala Leu Gln Asn Gly Glu Arg Ser Leu Lys Ser Pro Val
          110              115              120

cag gcc gac ttg gat gcg ttc cac tcg ggg ttt caa acc tgc gcc aaa      493
Gln Ala Asp Leu Asp Ala Phe His Ser Gly Phe Gln Thr Cys Ala Lys
          125              130              135              140

gaa gtc ttg caa tac ctc gcg cgc ttt gag agc tgg aca ccc agg gag      541
Glu Val Leu Gln Tyr Leu Ala Arg Phe Glu Ser Trp Thr Pro Arg Glu
          145              150              155

ccg cgc tgc gca cag ctc gtc agc cac ctg cat gcc gtg gcc acc cag      589
Pro Arg Cys Ala Gln Leu Val Ser His Leu His Ala Val Ala Thr Gln
          160              165              170

ctc ctg acg cca cag gtg ccc tcc ggc agg ggc tct ggg cgc gcg ccc      637
Leu Leu Thr Pro Gln Val Pro Ser Gly Arg Gly Ser Gly Arg Ala Pro
          175              180              185

tgc agc gcg ggg gct gcg gcc gcc tcg ggt ccc gag cgc gtc gcc cgc      685

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Cys	Ser	Ala	Gly	Ala	Ala	Ala	Ala	Ser	Gly	Pro	Glu	Arg	Val	Ala	Arg		
190						195					200						
tgc	gtg	ccg	gtc	atc	cag	cgg	act	cag	ccc	ggc	acg	gag	ccg	gaa	cac		733
Cys	Val	Pro	Val	Ile	Gln	Arg	Thr	Gln	Pro	Gly	Thr	Glu	Pro	Glu	His		
205					210					215					220		
gac	acg	gac	acc	gac	agc	ggc	tac	gga	ggc	gag	gcg	gag	cag	ggc	cgc		781
Asp	Thr	Asp	Thr	Asp	Ser	Gly	Tyr	Gly	Gly	Glu	Ala	Glu	Gln	Gly	Arg		
				225					230					235			
gcg	gcc	gtc	aag	cag	gag	cca	ccc	ggg	gac	tcg	tcg	cct	gcg	ccc	aag		829
Ala	Ala	Val	Lys	Gln	Glu	Pro	Pro	Gly	Asp	Ser	Ser	Pro	Ala	Pro	Lys		
			240					245					250				
agg	ccg	aag	ctg	gag	gcg	cgc	ggc	gcg	ctc	ctg	ggc	ccg	gag	ccc	gcg		877
Arg	Pro	Lys	Leu	Glu	Ala	Arg	Gly	Ala	Leu	Leu	Gly	Pro	Glu	Pro	Ala		
		255					260					265					
ctg	ctc	ggc	tcg	ctc	gtg	gcg	ctt	ggc	ggg	ggc	gcg	ccc	ttc	gcg	cag		925
Leu	Leu	Gly	Ser	Leu	Val	Ala	Leu	Gly	Gly	Gly	Ala	Pro	Phe	Ala	Gln		
		270				275					280						
ccc	gct	gcc	gcg	ccc	ttc	tgc	ctg	ccc	ttc	tat	ctg	ctg	tcg	ccg	tcc		973
Pro	Ala	Ala	Ala	Pro	Phe	Cys	Leu	Pro	Phe	Tyr	Leu	Leu	Ser	Pro	Ser		
285					290					295					300		
gcc	gcc	gcc	tac	gta	cag	ccc	tgg	cta	gac	aag	agc	ggc	ctg	gac	aag		1021
Ala	Ala	Ala	Tyr	Val	Gln	Pro	Trp	Leu	Asp	Lys	Ser	Gly	Leu	Asp	Lys		
				305					310					315			
tat	ctg	tac	ccc	gcg	gcg	gcc	gcg	ccc	ttc	ccg	ctg	ctg	tat	ccc	ggc		1069
Tyr	Leu	Tyr	Pro	Ala	Ala	Ala	Ala	Pro	Phe	Pro	Leu	Leu	Tyr	Pro	Gly		
			320					325					330				
atc	cca	gca	gcg	gcc	gcc	gct	gct	gct	gcc	gcc	gct	ttc	cct	tgc	ttg		1117
Ile	Pro	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Phe	Pro	Cys	Leu	
		335					340					345					
tcg	tcc	gtg	ctg	tcg	cca	ccc	ccg	gag	aag	gcc	ggc	gcg	acc	gcc	ggt		1165
Ser	Ser	Val	Leu	Ser	Pro	Pro	Pro	Glu	Lys	Ala	Gly	Ala	Thr	Ala	Gly		
		350				355				360							
gcc	ccg	ttc	ctg	gcg	cac	gag	gtg	gcg	ccc	ccg	ggg	ccg	ctg	cgc	ccc		1213
Ala	Pro	Phe	Leu	Ala	His	Glu	Val	Ala	Pro	Pro	Gly	Pro	Leu	Arg	Pro		
365					370				375					380			
cag	cac	gcg	cat	agc	cgc	acc	cac	ctg	ccg	cgc	gct	gtg	aac	ccg	gag		1261
Gln	His	Ala	His	Ser	Arg	Thr	His	Leu	Pro	Arg	Ala	Val	Asn	Pro	Glu		
				385					390					395			
agc	tct	cag	gaa	gat	gcc	acg	cag	ccg	gcc	aag	gac	gcc	ccc				1303
Ser	Ser	Gln	Glu	Asp	Ala	Thr	Gln	Pro	Ala	Lys	Asp	Ala	Pro				
			400					405					410				
tga	acc	cagc	att	cct	tcca	gaac	aggg	gca	gggg	gctccc	gagg	agtcgc	cggt	tttcca			1363
agtt	caa	acg	tcct	ctaa	aag	cgtg	ccagg	g	agga	agagta	agcg	atgctc	gac	aggct			1421

<210> 14
 <211> 410
 <212> PRT
 <213> Mus musculus

<400> 14

Met	Asp	Glu	Gly	Ile	Pro	His	Leu	Gln	Glu	Arg	Gln	Leu	Leu	Glu	His
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Arg	Asp	Phe	Ile	Gly	Leu	Asp	Tyr	Ser	Ser	Leu	Tyr	Met	Cys	Lys	Pro
			20					25					30		
Lys	Arg	Ser	Leu	Lys	Arg	Asp	Asp	Thr	Lys	Asp	Thr	Tyr	Lys	Leu	Pro
		35				40						45			
His	Arg	Leu	Ile	Glu	Lys	Lys	Arg	Arg	Asp	Arg	Ile	Asn	Glu	Cys	Ile
	50				55						60				
Ala	Gln	Leu	Lys	Asp	Leu	Leu	Pro	Glu	His	Leu	Lys	Leu	Thr	Thr	Leu
65					70					75					80
Gly	His	Leu	Glu	Lys	Ala	Val	Val	Leu	Glu	Leu	Thr	Leu	Lys	His	Leu
				85					90					95	
Lys	Ala	Leu	Thr	Ala	Leu	Thr	Glu	Gln	Gln	His	Gln	Lys	Ile	Ile	Ala
			100					105					110		
Leu	Gln	Asn	Gly	Glu	Arg	Ser	Leu	Lys	Ser	Pro	Val	Gln	Ala	Asp	Leu
		115					120					125			
Asp	Ala	Phe	His	Ser	Gly	Phe	Gln	Thr	Cys	Ala	Lys	Glu	Val	Leu	Gln
	130					135					140				
Tyr	Leu	Ala	Arg	Phe	Glu	Ser	Trp	Thr	Pro	Arg	Glu	Pro	Arg	Cys	Ala
145					150					155					160
Gln	Leu	Val	Ser	His	Leu	His	Ala	Val	Ala	Thr	Gln	Leu	Leu	Thr	Pro
				165					170					175	
Gln	Val	Pro	Ser	Gly	Arg	Gly	Ser	Gly	Arg	Ala	Pro	Cys	Ser	Ala	Gly
			180					185					190		
Ala	Ala	Ala	Ala	Ser	Gly	Pro	Glu	Arg	Val	Ala	Arg	Cys	Val	Pro	Val
		195					200					205			
Ile	Gln	Arg	Thr	Gln	Pro	Gly	Thr	Glu	Pro	Glu	His	Asp	Thr	Asp	Thr
	210					215					220				
Asp	Ser	Gly	Tyr	Gly	Gly	Glu	Ala	Glu	Gln	Gly	Arg	Ala	Ala	Val	Lys
225					230					235					240
Gln	Glu	Pro	Pro	Gly	Asp	Ser	Ser	Pro	Ala	Pro	Lys	Arg	Pro	Lys	Leu
				245					250					255	
Glu	Ala	Arg	Gly	Ala	Leu	Leu	Gly	Pro	Glu	Pro	Ala	Leu	Leu	Gly	Ser
			260					265					270		
Leu	Val	Ala	Leu	Gly	Gly	Gly	Ala	Pro	Phe	Ala	Gln	Pro	Ala	Ala	Ala
		275					280					285			
Pro	Phe	Cys	Leu	Pro	Phe	Tyr	Leu	Leu	Ser	Pro	Ser	Ala	Ala	Ala	Tyr
	290					295					300				
Val	Gln	Pro	Trp	Leu	Asp	Lys	Ser	Gly	Leu	Asp	Lys	Tyr	Leu	Tyr	Pro
305					310					315					320
Ala	Ala	Ala	Ala	Pro	Phe	Pro	Leu	Leu	Tyr	Pro	Gly	Ile	Pro	Ala	Ala
				325					330					335	
Ala	Ala	Ala	Ala	Ala	Ala	Ala	Ala	Phe	Pro	Cys	Leu	Ser	Ser	Val	Leu
			340					345					350		
Ser	Pro	Pro	Pro	Glu	Lys	Ala	Gly	Ala	Thr	Ala	Gly	Ala	Pro	Phe	Leu
		355					360					365			
Ala	His	Glu	Val	Ala	Pro	Pro	Gly	Pro	Leu	Arg	Pro	Gln	His	Ala	His
	370					375					380				
Ser	Arg	Thr	His	Leu	Pro	Arg	Ala	Val	Asn	Pro	Glu	Ser	Ser	Gln	Glu
385					390					395					400

Asp Ala Thr Gln Pro Ala Lys Asp Ala Pro
 405 410

<210> 15
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Artificially Synthesized Primer Sequence

<400> 15
 aaaatctctc caggcgaccg t 21

<210> 16
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Artificially Synthesized Primer Sequence

<400> 16
 agcctgtcga gcatcgctta 20

<210> 17
 <211> 412
 <212> PRT
 <213> Homo sapiens

<400> 17
 Met Glu Arg Ile Pro Ser Ala Gln Pro Pro Pro Ala Cys Leu Pro Lys
 1 5 10 15
 Ala Pro Gly Leu Glu His Gly Asp Leu Pro Gly Met Tyr Pro Ala His
 20 25 30
 Met Tyr Gln Val Tyr Lys Ser Arg Arg Gly Ile Lys Arg Ser Glu Asp
 35 40 45
 Ser Lys Glu Thr Tyr Lys Leu Pro His Arg Leu Ile Glu Lys Lys Arg
 50 55 60
 Arg Asp Arg Ile Asn Glu Cys Ile Ala Gln Leu Lys Asp Leu Leu Pro
 65 70 75 80
 Glu His Leu Lys Leu Thr Thr Leu Gly His Leu Glu Lys Ala Val Val
 85 90 95
 Leu Glu Leu Thr Leu Lys His Val Lys Ala Leu Thr Asn Leu Ile Asp
 100 105 110
 Gln Gln Gln Gln Lys Ile Ile Ala Leu Gln Ser Gly Leu Gln Ala Gly
 115 120 125
 Glu Leu Ser Gly Arg Asn Val Glu Thr Gly Gln Glu Met Phe Cys Ser
 130 135 140
 Gly Phe Gln Thr Cys Ala Arg Glu Val Leu Gln Tyr Leu Ala Lys His
 145 150 155 160
 Glu Asn Thr Arg Asp Leu Lys Ser Ser Gln Leu Val Thr His Leu His
 165 170 175
 Arg Val Val Ser Glu Leu Leu Gln Gly Gly Thr Ser Arg Lys Pro Ser
 180 185 190

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Asp Pro Ala Pro Lys Val Met Asp Phe Lys Glu Lys Pro Ser Ser Pro
    195                200                205
Ala Lys Gly Ser Glu Gly Pro Gly Lys Asn Cys Val Pro Val Ile Gln
    210                215                220
Arg Thr Phe Ala His Ser Ser Gly Glu Gln Ser Gly Ser Asp Thr Asp
    225                230                235                240
Thr Asp Ser Gly Tyr Gly Gly Glu Ser Glu Lys Gly Asp Leu Arg Ser
                245                250                255
Glu Gln Pro Cys Phe Lys Ser Asp His Gly Arg Arg Phe Thr Met Gly
                260                265                270
Glu Arg Ile Gly Ala Ile Lys Gln Glu Ser Glu Glu Pro Pro Thr Lys
    275                280                285
Lys Asn Arg Met Gln Leu Ser Asp Asp Glu Gly His Phe Thr Ser Ser
    290                295                300
Asp Leu Ile Ser Ser Pro Phe Leu Gly Pro His Pro His Gln Pro Pro
    305                310                315                320
Phe Cys Leu Pro Phe Tyr Leu Ile Pro Pro Ser Ala Thr Ala Tyr Leu
                325                330                335
Pro Met Leu Glu Lys Cys Trp Tyr Pro Thr Ser Val Pro Val Leu Tyr
                340                345                350
Pro Gly Leu Asn Ala Ser Ala Ala Ala Leu Ser Ser Phe Met Asn Pro
    355                360                365
Asp Lys Ile Ser Ala Pro Leu Leu Met Pro Gln Arg Leu Pro Ser Pro
    370                375                380
Leu Pro Ala His Pro Ser Val Asp Ser Ser Val Leu Leu Gln Ala Leu
    385                390                395                400
Lys Pro Ile Pro Pro Leu Asn Leu Glu Thr Lys Asp
                405                410

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<210> 18
<211> 253
<212> PRT
<213> Rattus norvegicus

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<400> 18
Met Asp Glu Gly Ile Pro His Leu Gln Glu Arg Gln Leu Leu Glu His
  1          5          10          15
Arg Asp Phe Ile Gly Leu Asp Tyr Ser Ser Leu Tyr Met Cys Lys Pro
    20          25          30
Lys Arg Ser Leu Lys Arg Asp Asp Thr Lys Asp Thr Tyr Lys Leu Pro
    35          40          45
His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile Asn Glu Cys Ile
    50          55          60
Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys Leu Thr Thr Leu
    65          70          75          80
Gly His Leu Glu Lys Ala Val Val Leu Glu Leu Thr Leu Lys His Leu
    85          90          95
Lys Ala Leu Thr Ala Leu Thr Glu Gln Gln His Gln Lys Ile Ile Ala
    100         105         110
Leu Gln Asn Gly Glu Arg Ser Leu Lys Ser Pro Val Gln Ala Asp Leu
    115         120         125
Asp Ala Phe His Ser Gly Phe Gln Thr Cys Ala Lys Glu Val Leu Gln
    130         135         140
Tyr Leu Ala Arg Phe Glu Ser Trp Thr Pro Arg Glu Pro Arg Cys Ala
    145         150         155         160
Gln Leu Val Ser His Leu His Ala Val Ala Thr Gln Leu Leu Thr Pro
    165         170         175

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Gln	Val	Thr	Pro	Gly	Arg	Gly	Pro	Gly	Arg	Ala	Pro	Cys	Ser	Ala	Gly
			180					185					190		
Ala	Ala	Ala	Ala	Ser	Gly	Ser	Glu	Arg	Val	Ala	Arg	Cys	Val	Pro	Val
			195				200					205			
Ile	Gln	Arg	Thr	Gln	Pro	Gly	Thr	Glu	Pro	Glu	His	Asp	Thr	Asp	Thr
	210					215					220				
Asp	Ser	Gly	Tyr	Gly	Gly	Glu	Ala	Glu	Gln	Gly	Arg	Ala	Ala	Val	Lys
225					230					235					240
Gln	Glu	Pro	Pro	Gly	Asp	Pro	Ser	Leu	Arg	Pro	Arg	Gly			
				245					250						